

**DOCKET NO. D-2003-13 CP-1**

**DELAWARE RIVER BASIN COMMISSION**

**Ground Water Protected Area**

**Buckingham Township**

**Groundwater Withdrawal**

**Buckingham Township, Buck County, Pennsylvania**

**PROCEEDINGS**

This docket is issued in response to an application referred to the Commission pursuant to an Administrative Agreement under Section 2-3.4 (a) and 2-3.7 of the *Administrative Manual - Part II, Rules of Practice and Procedure* by the Pennsylvania Department of Environmental Protection (PADEP) on August 12, 2004, for an allocation of ground water and review of a ground water withdrawal project in the Ground Water Protected Area of Southeastern Pennsylvania. The project wells were reviewed under the Pennsylvania Safe Drinking Water Act for a public water supply construction permit and approved by the PADEP on August 9, 2004, (Permit No. 0904503) subject to approval by the Delaware River Basin Commission (DRBC).

The application was reviewed for inclusion of the project in the Comprehensive Plan and approval under Section 3.8 and for a withdrawal permit under Section 10.3 of the *Delaware River Basin Compact*. The Bucks County Planning Commission has been notified of pending action on this docket. A public hearing on this project was held by the DRBC on October 27, 2004.

**DESCRIPTION**

**Purpose.** The purpose of this project is to supply up to 5.18 million gallons (mg)/30 days of water to the docket holder's public water distribution system from new Wells Nos. F-4 and F-5.

The proposed total allocation of ground water is an increase in allocation from 33.2 to 37.5 mg/30 days.

**Location.** The project wells are located in the Neshaminy Creek Watershed as follows:

<b>WELL NO.</b>	<b>LATITUDE (N)</b>	<b>LONGITUDE (W)</b>	<b>SUBBASIN</b>
BV-1	40° 19' 35"	75° 03' 54"	Mill Creek
BV-2	40° 19' 35"	75° 03' 55"	Mill Creek
CS-1	40° 20' 40"	75° 06' 19"	Pine Run
CS-2	40° 20' 25"	75° 06' 30"	Pine Run
CS-3	40° 21' 03"	75° 05' 34"	Pine Run
F-1	40° 17' 53"	75° 04' 27"	Mill Creek
F-2	40° 17' 40"	75° 04' 37"	Mill Creek
F-3	40° 17' 45"	75° 04' 38"	Mill Creek
F-4 (proposed)	40° 17' 55"	75° 03' 49"	Mill Creek
F-5 (proposed)	40° 17' 47"	75° 03' 53"	Mill Creek
FS-1	40° 19' 45"	75° 06' 12"	WSLNC*
FS-2	40° 19' 44"	75° 06' 12"	WSLNC*
L-1	40° 20' 55"	75° 02' 22"	Mill Creek
L-2	40° 20' 57"	75° 02' 27"	Mill Creek

\*WSLNC: Warminster Subbasin Little Neshaminy Creek.

Well Nos. F-1, F-4 and F-5 are in the Brunswick Formation, Well No. F-2 is in the mixed zone of the Brunswick and Lockatong Formations, and New Well No. F-3 is in the Lockatong Formation. All other wells in the Buckingham Township system are in the Stockton Formation.

**Area served.** The docket holder's water distribution system serves portions of Buckingham Township as shown on a map entitled "Water Supply Production & Monitoring Well Locations", submitted with the application.

**Physical features.**

a. **Design criteria.** Buckingham Township's water distribution system consists of five separate systems located throughout the township: the Buckingham Village, Cold Spring, Furlong, Fieldstone and Lahaska systems (their wells are labeled BV, CS, F, FS and L, respectively). Buckingham Township's distribution system provides for a reported average and maximum water demand for all systems of 14.2 mg/30 days and 18.3 mg/30 days, respectively. The docket holder projects a maximum water demand of 37.5 mg/30 days by the year 2013.

Buckingham Township is requesting an increase in allocation from 33.2 mg/30 days to 37.5 mg/30 days. The increase in allocation will be provided through New Wells Nos. F-4 and F-5, and the increase will primarily be used to meet water demand in the Furlong system, which has grown from a population of 531 to 2,181 since 2001.

b. **Facilities.** The docket holder's existing and proposed wells have the following characteristics:

WELL NO.	DEPTH	CASED DEPTH/ CASING DIAMETER	PUMP CAPACITY	YEAR DRILLED
BV-1	240'	141'/8"	52 gpm	1988
BV-2	240'	142'/8"	52 gpm	1988
CS-1	405'	75'/8"	120 gpm	1986
CS-2	555'	83'/8"	400 gpm	1989
CS-3	400'	116'/8"	210 gpm	1981
F-1	365'	60'/10"	175 gpm	1996
F-2	497'	42'/8"	83 gpm	1996
F-3	400'	82'/10"	75 gpm	1999
F-4 (proposed)	450'	40'/10"	104 gpm	2001
F-5 (proposed)	505'	60'/8"	50 gpm	2001
FS-1	335'	30'/8"	85 gpm	1981
FS-2	250'	30'/8"	85 gpm	1981
L-1	250'	70'/8"	75 gpm	1966
L-2	567'	140'/8"	55 gpm	1996

All wells and all water service connections are metered.

Well water is treated by chlorination prior to entering the distribution system. Water from existing Wells Nos. CS-1, CS-2, F-1, F-2 and F-3 is treated for manganese and iron. Water from New Well Nos. F-4 and F-5 will be treated for manganese as well.

The project facilities are above the 100-year flood elevation.

The water system is not presently interconnected with any other water distribution system. However, the Township plans to connect the Cold Spring and Fieldstone systems, which are presently located in close proximity of each other.

c. **Other.** Wastewater from the Buckingham Village and Lahaska service areas is conveyed to the Buckingham Village sewage treatment facility, which received approval most recently under Section 3.8 of the *Compact* by DRBC Docket No. D-86-65 on November 24, 1987.

Wastewater from the Furlong tract service area is conveyed to the Furlong Lagoon/Buckingham Forest Sewage treatment facility, which received approval most recently under Section 3.8 of the *Compact* by DRBC Docket No. D-98-49 CP on August 18, 1999.

Wastewater from the Cold Spring and Fieldstone service areas is discharged to three separate systems: the Fieldstone, Cold Spring and Chalfont-New Britain sewage treatment facilities, which received approval most recently under Section 3.8 of the *Compact* by DRBC Dockets Nos. D-95-43 CP on October 25, 1995, D-93-82 CP on August 10, 1994 and D-99-63 CP on March 7, 2000, respectively. All treatment facilities have adequate capacity to receive waste water from the proposed projects.

**Cost.** The overall cost of this project is estimated to be \$180,000.

**Relationship to the Comprehensive Plan.** Existing Wells Nos. BV-1, BV-2, CS-3, FS-1 and FS-2 were previously included in the Comprehensive Plan by Docket No. D-92-2 CP on August 12, 1992. Existing Wells Nos. CS-1, CS-2 were previously included in the Comprehensive Plan by Docket No. D-91-87 CP on June 24, 1992. Existing Wells Nos. L-1 and L-2, F-1 and F-2 were previously included in the Comprehensive Plan by Docket No. D-97-49 CP. All Buckingham Township wells were included/combined in Docket No. D-2000-38 CP.

## **FINDINGS**

The project is located within the Southeastern Pennsylvania Ground Water Protected Area delineated by the DRBC pursuant to *Compact* Section 10.2. Tests conducted by the docket holder indicate the operation of this project will not create a local water shortage. The project is designed to conform to the requirements of the *Water Code*, *Water Quality Regulations* and *Ground Water Protected Area Regulations (GWPAR)* of the DRBC.

Review and analysis of the application pursuant to Section 6.D. of the *GWPAR* result in the following:

1. The proposed withdrawal is consistent with the Commission's Comprehensive Plan and the policies and purposes of these regulations.
2. Opportunities to satisfy water requirements on a timely basis from existing available supplies and facilities have been explored and found infeasible.
3. The proposed withdrawal, in conjunction with other withdrawals in the applicable ground water basin, should not exceed withdrawal limits of the ground water basin, aquifer or aquifer system.
4. The proposed withdrawal should not significantly impair or reduce the flow of perennial streams in the area.

5. Existing ground and surface water withdrawals should not be adversely impacted, or will be otherwise assured of adequate supplies in accordance with the requirements of Section 10 of the *GWPAR*. No adverse impact is anticipated due to continued operation of this project.

6. The proposed withdrawal should not cause substantial, permanent adverse impact to the overlying environment.

7. The docket holder adopted and will implement conservation and management programs as required by Section 7 of the *GWPAR*.

The project does not conflict with the Comprehensive Plan, and is designed to prevent substantial adverse impact to the water resources related environment, while sustaining the current and future water uses and development of the water resources of the Basin.

To evaluate the yield of Wells Nos. F-4 and F-5 and the potential impacts on existing neighboring wells, a 96-hour pump test was conducted from March 4-8, 2002. Well No. F-4 was pumped at an average rate of 104 gpm continuously for 96 hours, and 48 hours into that period, pumping initiated on Well No. F-5 at a continuous rate of 49.5 gpm, and both wells were pumped together for approximately 48 hours. Total drawdown in Well No. F-4 at the conclusion of the pump test was 195.52 ft. and total drawdown in Well No. F-5 at the conclusion of the pump test was 110.48 ft. Based on the pump test data, drawdown in both Wells Nos. F-4 and F-5 reached equilibrium during the pump tests at their respective pumping rates, and both wells appear to be able to sustain long-term pumping at their respective pump-tested rates.

Thirteen (13) representative observation wells were monitored during the 48-hour pump test, in addition to Wells Nos. F-4 and F-5, Buckingham Township's existing production Well No. F-1 and two surface water ponds. Monitoring of water levels indicated that pumping of the production well affected water levels in seven (7) observation wells; MW-15 (Coles), Rawes Well, Deschamps Well, Swayze Well, Nicholas Well, Green Well and Fred Slack Well. Pumping of Wells F-4 and F-5 may have resulted in minor drawdown of the water level in the two surface water ponds (0.5 to 4 inches). The drawdown in the Coles, Deschamps and Green observation wells was significant, ranging from 22 to 25 ft., and based on this, the docket holder was specifically advised to ensure the provision of water to these residences before a docket could be issued. The docket holder replaced four residential wells and installed the new wells such that the depth would be sufficient to continue to provide the residences with water, even with some influence from pumping Wells Nos. F-4 and F-5. A representative set of the replaced private wells, as well as all observation wells monitored during the pump testing, will be included in an ongoing monitoring program in order to evaluate potential effects caused by pumping of Wells Nos. F-4 and F-5. This monitoring program is outlined in the Decision section of this docket.

Buckingham Township's service area covers portions of five of the GWPA subbasins defined in the GWPAR, and its existing and proposed wells are located in three of these subbasins. New Wells Nos. F-4 and F-5, along with existing Wells Nos. BV-1, BV-2, F-1, F-2, F-3, L-1, and L-2 are located in the Mill Creek subbasin, where total net annual groundwater withdrawal (152 mgy) is well below the withdrawal limit set in Section 6.I of the GWPAR (1565 mgy). Including the increase in allocation of 5.18 mg/30 days (62.2 mgy) from Wells Nos. F-4 and F-5, the total net annual groundwater withdrawal from this subbasin will remain well below the withdrawal limits set in Section 6.I of the GWPAR. Therefore, the proposed withdrawal from Wells Nos. F-4 and F-5, in conjunction with other withdrawals in the subbasin, is in accordance with the requirements of Section 6.I of the GWPAR.

Wells Nos. CS-1, CS-2, and CS-3 are located in the Pine Run subbasin, where total net annual ground water withdrawal (335 mgy) is well below the withdrawal limit set in Section 6.I of the GWPAR (795 mgy). Wells Nos. FS-1 and FS-2 are located in the Warminster Subbasin-Little Neshaminy Creek, where total net annual groundwater withdrawal (1308 mgy) is less than the withdrawal limit (1355 mgy), but greater than the potentially stressed level (1016 mgy) set in Section 6.I of the GWPAR. However, net annual groundwater withdrawals in these two subbasins are expected to remain at their current levels, because this docket does not change the allocation for the wells located in them.

The DRBC estimates that the project withdrawals, used for the purpose of public water supply, result in a consumptive use of ten percent of the total water use. The DRBC definition of consumptive use is defined in Article 5.5.1.D of the *Administrative Manual – Part III – Basin Regulations – Water Supply Charges*.

### **DECISION**

- I. Effective on the approval date for Docket No. D-2003-13 CP-1 below:
  - a. The projects described in Docket No. D-2000-38 CP are removed from the Comprehensive Plan to the extent that they are not included in Docket No. D-2003-13 CP-1; and
  - b. Docket No. D-2000-38 CP is rescinded and replaced by Docket No. D-2003-13 CP-1.
  - c. The project and the appurtenant facilities described in the Section entitled “Physical features” above shall be added to the Comprehensive Plan.
- II. The project as described in the Section entitled “Physical features” above is approved pursuant to Section 3.8 of the *Compact* and is granted this withdrawal docket pursuant to Section 10.3 of the *Compact* and *GWPAR*, subject to the following conditions:

a. Docket approval is subject to all conditions, requirements, and limitations imposed by the PADEP, and such conditions, requirements, and limitations are incorporated herein, unless they are less stringent than the Commission's.

b. The wells and operational records shall be available at all times for inspection by the DRBC.

c. The wells shall be operated at all times to comply with the requirements of the *Water Code* and *Water Quality Regulations* of the DRBC.

d. During any 30 day period, the withdrawals from the following wells shall not exceed:

Wells Nos. BV-1 and BV-2	3.2 million gallons
Wells Nos. CS-1, CS-2, CS-3	18.6 million gallons
Wells Nos. FS-1 and FS-2	1.8 million gallons
Wells Nos. L-1 and L-2	3.2 million gallons
Well No. F-1	4.7 million gallons
Well No. F-2	1.3 million gallons
Well No. F-3	2.1 million gallons
Wells Nos. F-4 and F-5	5.18 million gallons

The total withdrawal from Wells Nos. F-1 through F-5 shall not exceed 12.18 mg/30 days, and the total withdrawal from all wells shall not exceed 37.5 mg/30 days.

e. The proposed wells shall be equipped with readily accessible capped ports and drop pipes so that water levels may be measured under all conditions. Existing wells are to be similarly equipped, where possible, with readily accessible ports and drop pipes as repairs or modifications are made at each existing well.

f. The project withdrawals shall be metered with an automatic continuous recording device that measures to within 5 percent of actual flow. An exception to the 5 percent performance standard, but no greater than 10 percent, may be granted if maintenance of the 5 percent performance is not technically feasible or economically practicable. A record of daily withdrawals shall be maintained, and monthly totals shall be reported to the Bureau of Watershed Management, PADEP annually and shall be available at any time to the Commission if requested by the Executive Director.

g. Each new water service connection shall include a water meter in accordance with the DRBC's Resolution No. 87-7 (Revised).

h. The docket holder shall continue to implement its Water Conservation Plan as approved by PADEP, and shall report to the PADEP on the actions taken pursuant to this program and the impact of those actions as requested by the PADEP.

i. No water service connections shall be made to newly constructed premises with plumbing fixtures and fittings that do not comply with water conservation performance standards contained in Resolution No. 88-2 (Revision 2).

j. The docket holder shall implement to the satisfaction of the Bureau of Watershed Management, PADEP, a drought or other water supply emergency plan.

k. In accordance with DRBC Resolution No. 87-6 (Revised), the docket holder shall continue to implement to the satisfaction of the Bureau of Watershed Management, PADEP, the systematic program to monitor and control leakage within the water supply system. The program shall at a minimum include: periodic surveys to monitor leakage, enumerate unaccounted-for water and determine the current status of system infrastructure; recommendations to monitor and control leakage; and a schedule for the implementation of such recommendations. The docket holder shall proceed expeditiously to correct leakages and unnecessary usage identified by the program.

l. The docket holder shall implement to the satisfaction of the Bureau of Watershed Management, PADEP, a continuous program to encourage water conservation in all types of use within the facilities served by this docket approval. The docket holder will report to the Bureau of Watershed Management, PADEP, on the actions taken pursuant to this program and the impact of those actions as requested by the PADEP.

m. A long-term monitoring program is required to obtain data on ground water and surface water hydrologic conditions in the project area. The docket holder shall implement the long-term monitoring program as submitted by the docket holder in a report entitled "Township of Buckingham/Water Supply – Well Monitoring Program" dated February 11, 2004. This program will include the following:

1. **Ground Water Level Monitoring** - Thirty one (31) monitoring wells shall be measured to estimate annual ground water fluctuations caused by seasonal changes and/or production well pumping, and detect water level declines that may affect the performance of public and private wells in the respective areas surrounding the Buckingham Township production wells.

2. **Reports** - All monitoring data, including records required in Conditions "f." and "m." herein shall be submitted to the Commission annually beginning one month after the first year of operation. The docket holder is encouraged to submit the annual report electronically. The report shall be prepared by a hydrogeologist and shall assess the effects of well withdrawals on hydrologic conditions in the area. This report shall include an



evaluation of the monitoring data required by this docket approval and such information as deemed appropriate by the hydrogeologist or required by the Executive Director.

n. The Executive Director may modify the monitoring program or temporarily suspend or modify this docket at any time if review of the hydrologic data and/or any other information indicates such action is necessary or appropriate.

o. Sound practices of excavation, backfill and reseeding shall be followed to minimize erosion and deposition of sediment in streams.

p. No new water service connections shall be made to premises connected to sewerage systems which are not in compliance with all applicable effluent limits contained in State permits and the *Water Quality Regulations* of the Commission.

q. Nothing herein shall be construed to exempt the docket holder from obtaining all necessary permits and/or approvals from other State, Federal or local government agencies having jurisdiction over this project.

r. Upon completion of construction of the approved project, the docket holder shall submit a statement to the DRBC, signed by the docket holder's engineer or other responsible agent, advising the Commission that the construction has been completed in compliance with the approved plans, giving the final construction cost of the approved project, and the date the project is placed in operation.

s. This docket approval shall expire three years from the date below unless prior thereto the docket holder has commenced operation of the subject project or has expended substantial funds (in relation to the cost of the project) in reliance upon this docket approval.

t. The area served by this project is limited to the service area as described above. Any expansion beyond this area is subject to review in accordance with Section 3.8 of the *Compact* and the *GWPAP*.

u. This docket approval will expire on the expiration date indicated below unless the docket holder has submitted a complete application for renewal of this docket 12 months prior to the expiration date below, or permission has been granted by the DRBC for submission at a later date. In the event that a timely and complete application for renewal has been submitted and the DRBC is unable, through no fault of the docket holder, to reissue the docket before the expiration date, the terms and conditions of this docket will automatically continue and remain fully effective and enforceable pending the grant or denial of the application for docket approval.

v. The issuance of this docket approval shall not create any private or proprietary rights in the water of the Basin, and the Commission reserves the right to amend, alter or rescind any actions taken hereunder in order to insure the proper control, use and management of the water resources of the Basin.

w. If the monitoring required herein, or any other data or information demonstrates that the operation of this project significantly affects or interferes with any domestic or other existing wells or surface water supplies, or if the docket holder receives a complaint by any user of wells or surface water supplies within the zone of influence of the withdrawal, the docket holder shall immediately notify the Executive Director of any complaints by users of wells or surface water supplies within the zone of influence of the withdrawal, and unless excused by the Executive Director, shall investigate such complaints. Any well or surface water supply which is substantially adversely affected, or rendered dry or otherwise unusable as a result of the docket holder's project withdrawal, shall be repaired, replaced or otherwise mitigated at the expense of the docket holder in accordance with Section 10B of the *GWPAR*. A report of investigation and/or mitigation plan prepared by a hydrologist shall be submitted to the Executive Director as soon as practicable. The Executive Director shall make the final determination regarding the validity of such complaints, the scope or sufficiency of such investigations, and the extent of appropriate mitigation measures, if required. The Executive Director may modify or suspend this docket approval, or require mitigating measures, pending additional review.

x. For the duration of any drought emergency declared by either Pennsylvania or the Commission, water service or use by the docket holder pursuant to this approval shall be subject to the prohibition of those nonessential uses specified by the Governor of Pennsylvania, the Pennsylvania Emergency Management Council, PADEP, or the Commonwealth Drought Coordinator, to the extent that they may be applicable, and to any other emergency resolutions or orders adopted hereafter by the Commission.

**BY THE COMMISSION**

**APPROVAL DATE:**

**EXPIRATION DATE: October 27, 2014**